

## Assignment 1: Electricity

/20

### KNOWLEDGE & UNDERSTANDING (8 marks)

- /2 1. If you rub a comb through your hair and bring to close to some small pieces of paper, some of the pieces jump toward the comb, and then quickly jump off it again. Explain why.
- /2 2. Explain why an electric charge quickly builds up on the surface of wooden furniture when it is being polished, but not on water taps.
- /2 3. If you were given only a negatively-charged strip, how could you charge a metal-leaf electroscope: (A) positively? (B) negatively?
- /2 4. Consider the following interactions between various combinations of four pith balls, A, B, C and D. What is the charge on each pith ball?
- A and B repel one another
  - D attracts C and A
  - D is attracted to an acetate strip that has been rubbed with silk

### MAKING CONNECTIONS (10 marks)

- /2 5. Why do some cars and trucks have wires and chains hanging underneath them?
- /2 6. (A) List 1 safety precaution you should take inside a house during a lightning storm, and explain why.  
(B) List 1 safety precaution to follow if you are outside during a lightning storm, and explain why.
- /2 7. You want to buy a new comb to reduce the problem of flyaway hair on dry winter days. What should the comb be made of? Explain your choice. (**Hint:** review Table 1 in Sections 9.3 and 9.6)
- /2 8. When you polish a metal ornament in the kitchen, dust particles are attracted to it. However, when you polish a nearby metal tap, it does not attract dust particles. Explain these two situations.
- /2 9. Which has more need of lightning protection, a wooden barn or a steel skyscraper? Explain why.

### COMMUNICATION (2 marks)

- /2 Sentence structure, spelling & grammar, neatness & organization